

What is the Best Way to Learn and Develop in the Civil Engineering Industry?

During a recent mentoring session, a mentee asked “what is the most effective way to learn and develop?”. The stock answer is the ‘70:20:10 model’. This suggests that 70% of knowledge and understanding is gained from on-the-job experience, 20% from self-study, mentoring and learning from others, and 10% from training courses and the like. Effective learning is more complex than this, especially when you consider that the ‘70:20:10 model’ originated in the 1980’s based on research into what helped develop successful managers. So, is it valid for the construction industry?

Let’s go back to why we undertake learning and development in the civil engineering industry. Unlike manufacturing, nearly all our projects are prototypes, i.e. we design and build them once, not repeatedly. We therefore need to aspire to get everything right first time. This requires practitioners in the industry to constantly think clearly about all aspects of their projects, and it requires us to seek out new and innovative solutions without forgetting the lessons of the past.

To complicate matters further, our business and the world we work within is constantly changing and evolving. The Buckminster Fuller “Knowledge Doubling Curve” is based on the recognition that until 1900 human knowledge doubled approximately every century, but by 1950 it was doubling every 25 years and today it typically doubles circa every two years. It is debatable whether that is true in a conservative industry such as ours, which has to get it right first time and therefore tends to be risk averse. There is no doubt things are changing, and fast – for example off-site manufacturing, BIM, and new materials.

All this means is that what we learned at university or college has a limited ‘shelf-life’. We must continue to learn and develop throughout our career to at least keep up to date, and we ought to be aiming to stay ahead of the knowledge curve. That is why the Institution of Civil Engineers (ICE), and the Engineering Council and other professional bodies, place such importance on Continuing Professional Development (CPD) for a professional career. CPD for lifelong learning is considered the norm, and essential.

What then is CPD? Definitions vary but their thrust is similar. In their guide to CPD, the ICE defines CPD as:

“The systematic maintenance, improvement and broadening of knowledge and skills and the development of personal qualities necessary for the execution of professional and technical duties throughout your working life.”

Put another way, CPD is any learning that adds value and enhances your occupational knowledge and skills. It is not just technical, and it is not just knowledge – it is all embracing to match your working duties.

The key to learning effectively is to plan. You would not set out to travel anywhere without knowing where you want to go, and your requirements for the journey – quickest? most scenic? intermediate stop? The same applies in business – successful businesses plan, monitor their plan, and evolve their plan over time to suit their end-goal as opportunities arise and the market changes. Lifelong learning and development is no different. You need to set out your end-goal, set out a plan to work towards it, and implement and monitor your plan. In ICE language you need an annual Development Action Plan (DAP), you need to review your DAP and amend it as time goes by, and you need to record your learning in a Personal Development Record (PDR).

In civil engineering, CPD topics commonly addressed as part of a DAP and recorded in your PDR include:

- Understanding developing theories and practices that affect how we analyse, design and build
- Changing standards, such as British Standards and Eurocodes
- Developments in construction techniques
- Understanding past failures or issues and what lead to them
- The design processes and quality requirements
- Changing regulations, such as in health and safety
- Understanding company processes
- Understanding contracts and commercial processes / controls
- Understanding and developing people and teams
- Understanding ethical requirements

This list is far from exhaustive and you could add many more examples. As written they are all knowledge based though. We all need to develop our skills in applying them too, and we need to develop personally so we can put the learning into practice competently.

CPD activities to target the topics / areas you wish to develop (or your manager wishes you to develop in) commonly include:

- General reading and awareness (e.g. industry magazines, newspapers, New Scientist etc)
- Guided study to achieve a specific aim (e.g. trialling / using software, following a reading list, practicing a new method and comparing it with past methods)
- Attending professional body meetings (within and outwith your specialism)
- Asking questions of colleagues before, during and after you deliver your work
- 'Off-line' learning and practice in the work environment
- Mentoring by senior staff or colleagues (which could be technical or managerial or whatever else would benefit you)
- Annual performance reviews (if undertaken in a constructive fashion with a focus on what you did well as well as areas of relative weakness)
- Attending face to face training courses
- Undertaking e-learning courses
- Learning through personal activities (e.g. do you help organise events at a school?)

Each of these activities is valid, and each could suit different parts of your DAP. Remember though that there are different budgetary and time costs to each type of activity, and businesses do not usually invest hard-won returns unless they see there is going to be some pay-back to them at some point. That is why training budgets are managed, and why they should be evaluated to measure return on investment. That is why also so much emphasis is placed on 'free' learning activities such as learning on the job (70%?) or guided study (20%?). They can be very effective, and occur when you need them so you can combine 'theoretical' learning with skills development – thereby avoiding wasting expenditure on a course too far in advance of when you are likely to put any learning into practice. However, effective learning from on the job activity and guided study only usually occurs if you develop a perspective on them and question not just what you did, but why. That is why mentoring can be so effective – a good mentor will challenge you in a constructive environment.

Against the foregoing back-drop it is easy to see that there is no simple 70:20:10 answer to the question "what is the most effective way to learn and develop?". In our view, the model is a useful guideline that is a good starting point. The most effective balance is personal to you, meeting your individual needs within the budget available. Be clear what your needs are, select learning methods that will help you meet your goals, and try to undertake your learning close to the time when you will apply it in practice. In summary, be strategic and focused, and do not be afraid to deviate from the model to help you make the most of yourself.